

# **NCCS Snapshot**

## **The Week of January 21, 2008**

**NATIONAL CENTER**  
FOR COMPUTATIONAL SCIENCES

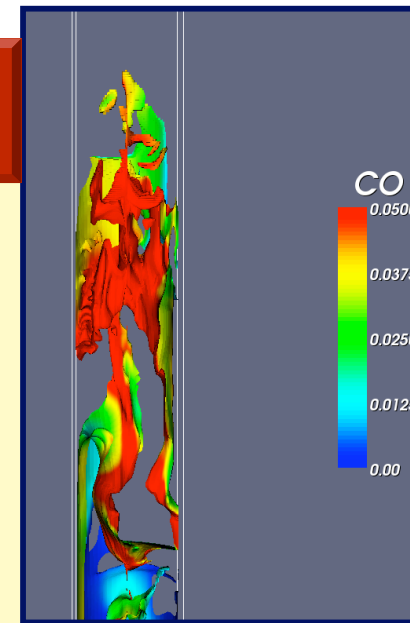


Oak Ridge National Laboratory  
U.S. Department of Energy

# Simulation Aids Development of First Coal Plants with Near-Zero Emissions

*Plants could soon produce electricity with minimal CO<sub>2</sub>*

- DOE researchers at the National Energy Technology Laboratory (NETL) and ORNL are using supercomputers to improve the design of coal plants
- Using the Jaguar Cray XT4 supercomputer at the NCCS, researchers performed the highest-resolution coal-gasification simulation to date
- Besides sequestering CO<sub>2</sub>, clean coal technology could eliminate other pollutants



*Efficient gasifiers maximize carbon monoxide (CO) production. Particle clusters colored by CO concentration are shown. Image courtesy NETL.*

*“An important part of NETL’s mission is to supply clean coal technology, and our research group at NETL develops computational tools and applications in support of that mission.”*

**Madhava Syamlal , NETL**

# James J. Hack Named Director of NCCS

Jim Hack



*Atmospheric scientist to head leadership computing facility at ORNL*

- James J. Hack, a senior scientist at the National Center for Atmospheric Research in Boulder, Colorado, has been appointed director of the NCCS
- Hack, along with LCF Project Director Buddy Bland, will identify major high performance computing needs from scientific and hardware perspectives and put forth strategies to meet those needs as machines evolve to the petascale and beyond
- Hack will also lead the Climate Change Initiative at ORNL

*"ORNL is in an incredibly unique position to substantially advance the most challenging of scientific problems and I'm deeply honored to have been selected to play a leadership role in the laboratory's vision."*

**Jim Hack, NCCS Director**

# ORNL Leads DOE INCITE Effort in 2008

- The NCCS will provide more than 145 million processor hours to 30 key scientific projects through DOE's INCITE program
- Through INCITE, researchers from industry, academia, and government research facilities will use the NCCS's computing power to advance scientific knowledge in a range of fields
- Major areas of research include alternative fuels, more efficient engine design, fusion energy, and climate models that will feature unprecedented accuracy



Office of Science  
U.S. DEPARTMENT OF ENERGY

# INCITE

Advancing America's Science  
and Industrial Competitiveness

*"We're extremely happy to be able to pursue our research on ORNL's leadership-class systems. This allocation will greatly advance our efforts to improve vehicle fuel efficiency and promote American energy independence."*

Jihui Yang, General Motors

***Climate, energy assurance high priorities***



# Knoxville Hosts Dynamic Days

## Visiting researchers tour ORNL



*Don Frederick of the National Center for Computational Sciences (NCCS), right, confers with a conference attendee at the NCCS exhibit.*

- Scientists from around the world recently converged on Knoxville, Tennessee to attend the annual Dynamics Days International Conference
- The conference focused on chaos, complex systems, and nonlinear dynamics
- Several ORNL researchers helped to organize the conference and visiting scientists toured ORNL facilities, including the National Center for Computational Sciences